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ABSTRACT

Results of a staff study concerning the State of Washington's existing budget formula for instruction for higher education are discussed, and areas where inconsistencies and/or inequities exist are examined. The instructional formula does not include all instructional activities: health sciences, special sessions, community and extension education, and the Joint Center for Graduate Education are excluded. The formula is actually two separate formulas, one covering faculty staffing and the other encompassing instructional support costs. In both cases, workload indicators are multiplied by formula factors to develop amounts (number of faculty or dollars) at "100 percent of formula." Among the issues addressed are the following: (1) the overall percent of formula for staffing and support costs for the community college system and four-year institutions; (2) the process used to determine staffing levels for the lower division academic category; (3) the allocation of resources to the high cost discipline categories of the two doctoral universities; (4) the allocation of faculty resources to the law discipline at the University of Washington; (5) the balance between formula assumptions and resource allocation among course level categories for the four-year institutions; (6) the use of the 600-plus level category for faculty resource determination by the regional universities; (7) the distribution of student credit hours between lower and upper division levels of instruction at Evergreen State College; and (8) treatment of nonformula faculty. Excerpts from the "Formula Manual" and statistical tables on faculty staffing are appended. (SW)

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Report No. 81-5

STATE OF WASHINGTON
COUNCIL FOR POSTSECONDARY EDUCATION

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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INSTRUCTIONAL FORMULA RELATED ISSUES:
A FACT-FINDING REPORT

NOVEMBER, 1980

PREPARED BY:
NORMAN M. FISCHER

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908 East Fifth Avenue
Olympia, Washington 98504

PREFACE

As the analysis evolved in terms of the Council staff's review of the Instructional Formula, Council members expressed concern over the enrollment sensitivity of the existing formula. Since receiving the initial directive in 1975, actual enrollment levels and their relationship to contracted levels have varied significantly, as both community colleges and four-year institutions enrolled more students than were agreed to in their individual enrollment contracts. As available funds for post-secondary education become more critical, the enrollment sensitivity of the current instructional formula becomes more evident. The Council's feeling that concentration on the study of the overall higher education financial structure should be emphasized has subsequently been recognized by executive and legislative staff and is reflected in this report.

As indicated in the report, the staff explored several alternatives with executive and legislative staff and the approach developed in this report met with favorable response from the staff directors of the Office of Financial Management and the House and Senate Fiscal Committees. Although this report does not make specific recommendations, the report does outline a number of findings concerning inequities and inconsistencies that relate to the present application of the instruction formula.

The findings as discussed in the report encompass the following areas:

1. The overall percent of formula for staffing and support costs for the community college system and four-year institutions;

2. The process used to determine the faculty staffing levels for the lower division academic category for the community college system and four-year institutions;

3. The allocation of resources to the high cost discipline categories of the two doctoral universities;

4. The allocation of faculty resources to the law discipline at the University of Washington;

5. The balance between formula assumptions and resource allocation among course level categories for the four-year institutions;

6. The use of the 600+ level category for faculty resource determination by the regional universities;

7. The distribution of student credit hours between lower and upper division levels of instruction at The Evergreen State College;

8. The treatment of nonformula faculty among the community college system and the individual four-year institutions; and

9. An analysis of the determination of the percent of formula comparisons for overall support costs for the community colleges and four-year institutions.

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BACKGROUND

Although the Council expressed concern over the continued emphasis on FTE enrollments, revised instructional formula recommendations were made in October, 1976. These recommendations were the result of a year-long review and analysis of existing formula practices and relevant data. However, both the executive budget request and the final Appropriations Act for 1977-79 used the existing instructional formula factors. At the same time, the Council was requested to continue its work on the development a revised formula structure. In response to the Appropriations Act proviso, the study of the instructional formula was continued in 1977-79. Delays in completion of the 1976-77 Unit Expenditures Study resulted in deferral of further work until the current biennium.

The period between December, 1979 and April, 1980 was devoted to developing a discussion draft for review by a broadly based task force involving both institutional and agency representatives. This draft, entitled "Instructional Formula: A Revised Approach", outlined revisions within a context similar to that which has been used in this state since the mid 1950's. It did suggest a variety of modifications designed to more closely approximate existing practice and give greater emphasis to institutional role and mission. The overriding theme of the advisory committee discussion, however, was whether or not there should be <u>any</u> changes to the existing instructional formula at this time. Lack of enthusiasm for any change on the part of the two and four-year institutional representatives led to a staff reassessment of the project.

In July, President Evans expressed the sentiment of the Council of Presidents to Mr. Norris, Council Executive Coordinator, as follows:

> "... First, we suggest that the current instructional formula be retained for the 1981-83 biennium, with only essential adjustments being made to it. Second, we recommend that the CPE staff stop work on its present formula proposal and begin as soon as possible on the development of an entirely new funding approach for higher education. ..."

In his response, Mr. Norris pointed out that the presidents' desire for a reexamination of state provisions for higher education finance coincided:

> "... with considerations we have been discussing internally at the staff level. Council members also have expressed strong sentiments for a basic reexamination of funding formulas in view both of history and the changed environment for the 1980's. ..."

Subsequently, a memorandum was sent to Lyle Jacobsen, Director of the Office of Financial Management; Mark McLaughlin, Staff Director of the Senate Ways and Means Committee; and Don Meyer, Staff Director of the House Appropriations Committee. The memorandum outlined two alternative approaches for the project: (1) To continue developing specific recommendations for revision; or (2) To prepare a fact-finding report explaining the results of our review and identifying areas of inconsistency and questions. Mr. Norris noted in the memorandum that:

> "... The latter approach has considerable appeal since it would provide your respective staffs with insights into the formula pertaining to inconsistencies and inequities which have been identified while still leaving open options for exploring improvements in the basic approach of budgeting for instructional services in higher education. ..."

The responses indicated a consensus that a more indepth approach would be more appropriate rather than making minor adjustments to the

current formula which could be viewed as an endorsement of the present system of budgeting. It was agreed that the Council staff should begin to explore ways of freeing up staff time for a complete review of the budgeting structure for the instructional program, including a review of the basic assumptions that are currently in place within the context of possible changes in the overall financing structure for Washington postsecondary education.

The purpose of this report is to explain the results of the staff study of the existing budget formula for Instruction and identify areas where evidence indicates that inconsistencies and/or inequities exist.

THE EXISTING FORMULA APPROACH

The "Instructional Formula" encompasses the largest single area of higher education operation. Even so, it does not include all instructional activities. Health sciences, special sessions, community and extension education and the Joint Center for Graduate Education are subprograms excluded from the formula.

Another point which should be clarified is that the "formula" is actually two separate formulas; one covering faculty staffing and the other encompassing instructional support costs, e.g., support staff, supplies, equipment, etc. In both cases, workload indicators are multiplied by formula factors to develop amounts (number of faculty or dollars) at "100 percent of formula." In the support cost area, the four-year indicators are faculty; while in the community colleges, student credit hours are the workload indicators. Actual or budgeted amounts are then

compared to these totals to determine "percentage of formula." A major feature of the formula approach in Washington is that the formula factors are rarely changed and that different levels of support have been reflected by changing the percentages of formula. Appendix A provides an overview of the existing formula approach.

Finding:

The overall instructional program contains several non-formula activities. The staffing formula is currently funded at 70 percent of formula for the two doctoral universities and 72 percent of formula for the regional universities, The Evergreen State College and the community college system. Support cost percent of formula relationships are currently determined on a different basis for the four-year institutions vis-a-vis the community college system.

THE FACULTY STAFFING FORMULA

Table I outlines the current formula factors for the four-year institutions and the community colleges. The four-year formula has different factors for course level groupings and only limited discipline differentiation. Only the two doctoral universities have special recognition of a few "high cost" areas unique to those institutions. On the other hand, a discipline cluster approach is used by community colleges. The FTE student per faculty ratios are revised annually based on the mix of disciplines within the clusters using 1971-72 formula values for each individual discipline.

TABLE I

Current Formula Faculty
Staffing Ratios

Four-Year Institutions

Regular Cost

100/200 Course Levels:	300 SCH per FTE formula faculty*
300/400 Course Levels:	165 SCH per FTE formula faculty
500 Course Levels:	70 SCH per FTE formula faculty
600/700 Course Levels:	50 SCH per FTE formula faculty

High Cost**

100/200 Course Levels:	180 SCH per FTE formula faculty
300/400 Course Levels:	105 SCH per FTE formula faculty
500 Course Levels:	70 SCH per FTE formula faculty
600/700 Course Levels:	50 SCH per FTE formula faculty

Community Colleges***

Academic	FTE Student/ Faculty Ratio
Business Administration	24.36:1
Sciences	17.34:1
Mathematics	21.60:1
Social Sciences	22.45:1
Humanities	16.21:1
Health and Physical Education	14.05:1
Education	22.32:1
Vocational	
Business and Commerce Technology	17.34:1
Data Processing Technology	14.37:1
Health and Paramedic Technology	10.29:1
Mechanics and Engineering Technology	14.33:1
Natural Sciences Technology	15.02:1
Public Services Technology	15.43:1
Occupational Support Technology	17.99:1

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* The ratios are expressed in credit hours per faculty and may be interpreted as student-faculty ratios by dividing 100-400 level hours by 15 and 500 level and above hours by 10.

** "High cost areas" are limited to those statutory major lines at the two doctoral universities with demonstrably lower student faculty ratios at the undergraduate course levels. (The "high cost areas" are defined as the College of Engineering at both doctoral universities and the Colleges of Architecture, Fisheries, and Forestry at the University of Washington.)

*** The community college system does not have a non-formula faculty component. Their formula does include a category for supervision.

1. Equity of the Lower Division Academic Student/Faculty Ratio Formula Factors

As Table I indicates, the current formula for the community colleges utilizes seven different ratios for seven academic clusters. The mix of student credit hours among disciplines has changed over time resulting in a more advantageous composite ratio than that applied to the four-year institutions whose ratios remain fixed. The community college formula also includes recognition of a five percent factor for supervisory faculty. There is no comparable supervisory category in the four-year formula.

Finding:

Due to the differences in the faculty staffing formulas used by community colleges and four year institutions, 5.7 more FTE faculty positions* are funded for each 1.000 FTE of lower division academic enrollment in the community colleges than at four-year schools at 100 percent of formula.

2. Questions of Resource Allocation Among Formula Categories

One of the major analyses conducted in the Council's biennial Unit Expenditures Study concerns the utilization of instructional funds among disciplines and course levels. These reviews have indicated differing patterns among institutions, as well as a number of aggregate similiarities. For example, the Social Sciences tend to have higher student faculty ratios

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* Based on 1978-79 Legislative Evaluation and Accountability Program (LEAP) budget data for the community college system.

than the Physical Sciences and the Fine Arts at all institutions. Such differences within formula categories are to be expected in an aggregate model. When substantial differences exist between formula assumptions for a category and the actual institutional allocation of resources, however, a question of formula validity is raised.

As part of the staff review of the instruction formula in 1976-77, as well as in the current research, the differences between where faculty resources were budgeted and where they were expended were outlined. Appendix B contains several tables which provide information on the actual percent of formula by major discipline area. This information is helpful to an understanding of the discussion of the topics in this section.

A. The High Cost Formula

Since the late 1950's, the faculty staffing formulas for the two doctoral universities have contained a "high cost" component consisting of disciplines unique to those institutions. Since 1967, that category has consisted of the "major line" disciplines of Agriculture, Fisheries, Forestry, Architecture, and Engineering. Table I on Page 5 indicates the more favorable student/faculty ratios for lower and upper division courses in those areas.

In recent months there has been considerable concern expressed by institutions, students, and legislators concerning the ability of the two doctoral universities to accommodate the demand for engineering education. The Council itself held a special informational session on the subject and a hearing on the matter was conducted by the House Committee on Higher Education. At the request of Committee staff, both

the doctoral institutions, as well as the Council staff, provided information concerning the utilization of resources in engineering vis-a-vis the budgeted level of formula staffing. That information indicated that in 1972-73 those universities funded the Engineering discipline at equal to or greater than the amounts assumed in the high cost formula. The University of Washington funded Engineering at 73 percent of formula and Washington State University at 89 percent of formula in 1972-73. Since that time, however, institutional allocations of faculty positions to Engineering relative to formula assumptions have dropped substantially.

As an outgrowth of the legislative hearing, Representative Dan Grimm, Executive Co-Chairman of the House Committee on Higher Education, wrote to Mr. Norris on August 6, 1980. Representative Grimm's letter stated that University of Washington representatives had indicated at the hearing that although the University's "... budget request submissions were built on the basis of Engineering credit hours as 'high cost', the University neither allocates nor monitors expenditures on that basis." Representative Grimm went on to request that the Council review the expenditure patterns in high cost programs other than Engineering at both the University of Washington and Washington State University to determine whether these are being treated in a similar fashion. (A copy of Representative Grimm's letter is provided in Appendix C.) This section of the report is intended to respond to Representative Grimm's request.

Tables B-1 and B-2 in Appendix B indicate the relative percentages of formula faculty FTE's for the various disciplines at the two doctoral universities. These tables indicate that in 1976-77 a portion of the

faculty positions budgeted for the "high cost" categories were, in fact, used to support disciplines in other areas. Table B-1 for the University of Washington shows that Area Studies, Biological Sciences, Fine and Applied Arts (Music, Dance, and Art), Foreign Languages, Home Economics, Physical Sciences, and Interdisciplinary Studies were the primary beneficiaries. The Engineering discipline was staffed at 61.8 percent of the "high cost" formula - 11 points below the 1972-73 approved funding level. The Agriculture and Natural Resources discipline (encompassing Fisheries and Forestry) was staffed at 51.1 percent of formula, and Architecture and Environmental Design at 66.0 percent.

Table B-2, which summarizes the data for Washington State University, indicates a pattern similar to the University of Washington where both Agriculture and Engineering are below the formula calculated level with Fine and Applied Arts, Foreign Languages, Letters, and Interdisciplinary Studies the primary beneficiaries.

The review of 1978-79 Unit Expenditures Study data, while still in the process of final verification, indicates that the pattern for 1978-79 is similar to that of 1976-77. Preliminary data for 1978-79, exclusive of faculty with cost sharing commitments, reflect the following "percentages of formula" for the "high cost" disciplines:

	University of Washington	Washington State University
Agriculture and Natural Resources	52%	54%
Architecture and Environmental Design	64%	--
Engineering	55%	53%

Finding:

Reports of the two doctoral universities for recent years indicate that a portion of the faculty positions justified on the basis of the "high cost" formula were, in fact, utilized to support disciplines in the "regular cost" formula category, with the net result that the percentage of formula utilized for the "high cost" category was substantially lower than the institution-wide average.

B. Resource Allocation: University of Washington Law School

Although law is not a "high cost" area under the formula, it was felt that this professional program should also be reviewed in terms of its resource utilization. The University of Washington has the only publicly funded law school in the state. Law comprises approximately 17 percent of all student credit hours reported at the 500 level by the University.

Table B-1 shows a 36.3 percent level of faculty staffing in 1976-77. Preliminary data for 1978-79 indicate the percent of formula staffing for this discipline will be at approximately 50 percent of formula. The student/faculty ratio for the 500 level in 1976-77 was 225:1 for law. The ratio for all other disciplines at the 500 level for the same year was 84:1.

Finding:

The credit hour per faculty ratios for the University of Washington Law School indicate substantial differences from other discipline categories at the 500 level. Ninety-five

percent of the law student credit hours are reported at the 500 level. The percentage of formula for the law discipline is substantially lower than the institution-wide average indicating that formula treatment of this unique program generates resources used to support other programs.

C. Resource Allocation Among Course Levels

In addition to the analysis of discipline by discipline formula percentages, institutional resource allocation can also be analyzed by course level. As shown in Table I, the staffing parameter for the lower division course level for the four-year institutions is 300 student credit hours per faculty FTE. The "regular cost" formula values for the upper division level, the 500 level and the 600+ level are 165, 70, and 50 respectively. The ratio of the formula relationships by course level for regular cost categories is as follows:

100/200 to 100/200	300/400 to 100/200	500 to 100/200	600/700 to 100/200
$\frac{300}{300} = 1.00$	$\frac{300}{165} = 1.82$	$\frac{300}{70} = 4.29$	$\frac{300}{50} = 6.00$

Similar calculations yield the following ratios for the high cost categories: 100/200 - 1.00; 300/400 - 1.71; 500 - 2.57; 600/700 - 3.60.

Table II compares the formula relationships (how the resources were funded) to the actual relationships using 1976-77 Unit Expenditures Study data for the "regular cost" disciplines at the six four-year institutions. Table III provides the same analysis for the "high cost" disciplines at the two doctoral universities.

An analysis of Tables II and III indicates:

University of Washington: Faculty utilization approximates formula at all course levels for regular cost categories, and for all except the 500 level, where emphasis is greater, for the high cost categories.

Washington State University: Emphasis in terms of resource allocation in the regular cost category is placed in the upper division and 500 course level areas. In the "high cost" category, there is good resource allocation balance among all the course levels.

Central Washington University: The proportional allocation of resources to the lower division is greater than assumed in the formula. The ratios for the upper division and the graduate levels are, therefore, substantially lower. The small number of 600 level offerings makes comparisons of questionable value at that level.

Eastern Washington University: The comments regarding Central generally apply here.

Western Washington University: There is good balance at the upper division level. As in the case of Central and Eastern, however, graduate levels do not receive their proportional share of budgeted resources.

The Evergreen State College: There is no relationship between how resources are budgeted under the formula and how they are assigned among course levels.

Finding:

There is generally an acceptable balance between formula assumptions and resource allocation among course level categories in the four-year institutions with the following major exceptions: The distribution of faculty resources at the graduate level for the regional universities and the distribution of faculty between the two levels of undergraduate instruction at The Evergreen State College. (These elements are discussed in more detail later in this report.)

TABLE II

"Regular Cost" Formula
Resource Assignment by Course Level
Budgeted Vis-a-Vis Assigned
Four-Year Institutions

	Ratio Relationships					
	Formula	UW	WSU	CWU	EWU	WWU	TESC
Lower Division Level (1.00) To:							
Upper Division Level	1.82	1.95	2.14	1.54	1.42	1.83	0.80
500 Level	4.29	4.13	5.80	2.95	3.15	2.98	--
600+ Level	6.00	6.05	5.02	1.92	3.81	4.49	--

SOURCE: 1976-77 Unit Expenditures Study and includes all faculty except those in the "high cost" disciplines (Agriculture, Architecture, and Engineering) for the two doctoral universities.

TABLE III

"High Cost" Formula
Resource Assignment by Course Level
Budgeted Vis-a-Vis Assigned
Doctoral Universities

	Ratio Relationships		
	Formula	UW	WSU
Lower Division Level (1.00) To:			
Upper Division Level	1.71	1.69	1.53
500 Level	2.57	3.79	3.25
600+ Level	3.60	3.84	3.68

D. Resource Allocation at the Graduate Level for the Regional Universities

Data regarding graduate student credit hours are displayed in Table B-6. A summary of the detailed data contained in Table B-6 indicates student credit hour growth between 1972-73 and 1978-79 for the 500 and 600+ level disciplines as follows:

	Student Credit Hour Growth		
	500 Level	600+ Level	Overall Graduate
Doctoral Universities	26.6%	16.8%	23.2%
Regional Universities	57.4%	256.4%	67.3%

An analysis of the deployment of faculty staffing resources between the 500 and 600+ level as observed in the 1976-77 Unit Expenditures Study indicated overall ratios of 121.97 and 107.70 for the 500 and 600+ levels respectively. This is a variance of approximately 13 percent. This compares with a formula entitlement allowance difference of 40 percent (70 ÷ 50).

An analysis of the support cost area indicates almost no difference between the 500 and 600+ course levels ($36.91 vis-a-vis $36.92 per student credit hour). While the 600+ level is associated with doctoral education in the two doctoral universities, regional universities are precluded from offering such programs by law. Therefore, coding of any graduate courses at regional universities higher than 500 is a questionable practice.

Finding:

There has been considerable expansion of 600+ student credit hours at the regional universities. Current resource allocation

(faculty and support) indicates very little differentiation between the 500 and 600+ levels. There is no commonly understood definition of 600 and above course level credits in the formula.

E. Resource Allocation for The Evergreen State College: Student Credit Hour Distribution

Table IV compares the percentage relationships between student level and discipline level for each of the four-year institutions. Although Evergreen has the highest percentage of freshmen and sophomore students, it has the lowest percentage of student credit hours reported at the lower division level.

Finding:

Evergreen's instructional approach has been (and is likely to continue to be) one which allocates similar faculty staffing resources to the lower and upper division. In order to accommodate its instructional approach to the formula, it is evident that the "course" level distinctions have become blurred. The course level classification, therefore, has deviated substantially from student classifications.

F. Resource Allocation in the Community College System

Each academic and vocational category in the community colleges was analyzed using a percentage of formula approach. Table V provides various comparisons based on 1976-77 Unit Expenditures Study data.

TABLE IV

Percentage Comparisons
Discipline Level and Student Level

	Lower Division Discipline Level*	Freshmen and Sophomore Class Level**	Upper Division Discipline Level*	Junior and Senior Class Level**
University of Washington	57.8	47.8	42.2	52.2
Washington State University	58.8	54.0	41.2	46.0
Central Washington University	46.8	50.3	53.2	49.7
Eastern Washington University	48.7	49.9	51.4	51.1
Western Washington University	56.5	54.8	43.5	45.2
The Evergreen State College	42.7	58.2	57.3	41.8

* Average annual student credit hours as reported in 1978-79 Unit Expenditures Study.

** Student class level as reported for fall, 1978 in the Higher Education Enrollment Report. (The percentage relationships were derived from the data reported in Table 1A of the report and exclude the Unclassified 5's, Graduate Professional, and "Other" Student categories.

TABLE V

Community College System
1976-77 Resource Assignment by Academic and Vocational Category
Budgeted Vis-a-Vis Assigned

		Percentage of Formula Relationship
Academic		
1.	Business Administration	76
2.	Sciences	75
3.	Mathematics	76
4.	Social Sciences	76
5.	Humanities	75
6.	Health and Physical Education	73
7.	Education	75
Vocational		
1.	Business and Commerce	72
2.	Data Processing	72
3.	Health Sciences	70
4.	Mechanical and Engineering	72
5.	Natural Sciences	72
6.	Public Service	71
7.	Support	71

Finding:

There is good resource allocation balance between the various cluster categories in both the academic and vocational areas. The data indicate a pattern of augmentation above the approved formula funding level (72 percent) for the academic clusters.

3. Faculty with Administrative Responsibilities

The current formulas used for the two and four-year institutions employ somewhat different approaches for determining those faculty FTE's that have administrative responsibilities. The four-year institutions have a "non-formula" factor as part of their overall budget calculation system. An analysis of the LEAP data for 1978-79 revealed considerable variance in the number of positions included in this category. The University of Washington included an additional 4.0 FTE's, while Eastern included 10.0. The counts at the other four-year institutions were: Western, 7.6; Washington State, 7.3; Central, 7.0; and Evergreen, 0.0. The community college system formula includes 2 FTE's for each campus in a separate non-formula category. The four-year institutions use their average faculty salary which ranged from a high of $23,031 at the University of Washington to a low of $19,560 at Western Washington University for 1978-79. The community college system, on the other hand, uses the average salary of the individuals involved, which for 1978-79 was estimated to be $29,690.

Finding:

There is a major inconsistency in the treatment of nonformula faculty among the community college system and the individual four-year institutions.

4. Support Cost Percent of Formula Relationships

As part of the support cost analysis, the support cost dollar base was recalculated at 100 percent of formula. The calculations did not agree with the figures in the Legislative Evaluation and Accountability Program (LEAP). Although it had been understood that the four-year model was based on FTE faculty and the two-year model was based on FTE students (student credit hours), it wasn't until the calculations were run independently of the LEAP model that it was discovered that the "actual" four-year percent of formula represents a "discounted" percentage.

To explain, in the case of the four-year institutions, the level of faculty support is initially determined at a percent of formula less than 100 percent (72 percent of formula, for example). The support cost dollar value at 100 percent of formula is subsequently reduced to a "funded percent of formula", such as 75 percent. The dollars that the four-year institutions receive are determined by multiplying a faculty FTE count reduced to 72 percent of formula times a support cost dollar value reduced to 75 percent of formula. The figure which has been used for comparison purposes is the 75 percent figure.

The current approach used in the two-year formula is to reduce the support cost dollar value per FTE student to a "funded percent of formula" (51.5 percent of formula, for example) and multiply this figure times the total FTE student enrollments. Consequently, the subsequent comparison of 75 percent to 51.5 percent does not use the same "measuring stick." The comparative figure for the four-year institutions would be 54 percent (72% X 75%).

Table VI compares the currently defined percentage relationships for 1979-80 to the percentage relationships: (1) Using the "four-year approach" both for each four-year institution and for the community college system; and (2) Using the "two-year approach" both for each four-year institution and for the community college system.

Finding:

The percentage relationships using either the four-year or the two-year approach reflects a situation much more in balance than the percentage relationships as are currently defined. It is also important to note that when the two-year approach is used one becomes aware of the inequity that the two doctoral universities face compared to the regional institutions when their FTE faculty base is funded at a lower percent of formula (70 percent vis-a-vis 72 percent).

FUTURE DIRECTION

As stated at the outset, no definitive recommendations for change in the instructional formula are proposed at this time. This analysis is to be transmitted to the Governor and Legislature as background information in the development of budget policy for the 1981-83 biennium.

One of the major priorities for available Council for Postsecondary Education staff in the 1981-83 biennium will be to address the financing system and structure for Washington's public higher education. Public higher education in the State of Washington is an enterprise which costs

TABLE VI

Support Cost Percent of Formula Comparisons
1979-80

	Currently Defined Percentage Relationships	Percentage Relationships Using the Four-Year Approach	Percentage Relationships Using the Two-Year Approach
University of Washington	75.0%	75.0%	53.0%
Washington State University	75.0%	75.0%	52.6%
Central Washington University	75.0%	75.0%	55.2%
Eastern Washington University	75.0%	75.0%	55.5%
Western Washington University	75.0%	75.0%	54.9%
The Evergreen State College	75.0%	75.0%	54.0%
Community College System	51.5%	70.1%	51.5%

SOURCE: LEAP Data.

well over a billion dollars of tax funds and student fees each biennium, and decisions are heavily affected by data assumptions and constructs developed in the late 1960's and early 1970's. It is clear that additional efforts to explore new ground in higher education finance and to determine the applicability of approaches and concepts developed elsewhere are critically necessary.

APPENDIX A

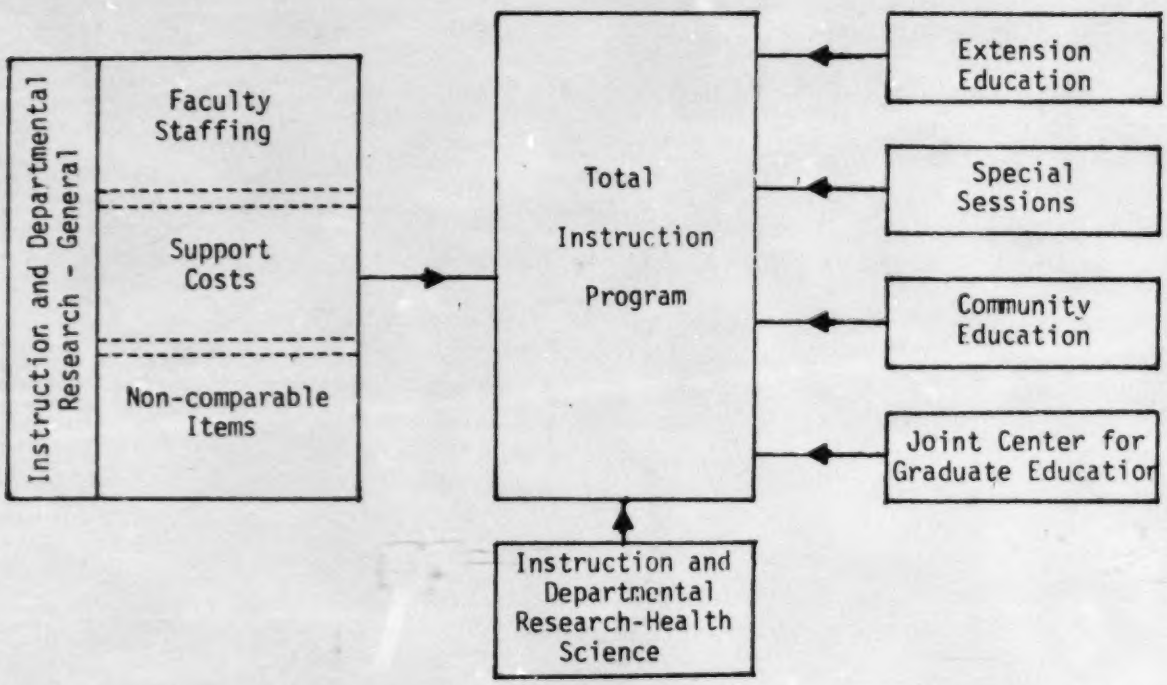
Excerpt from "The Formula Manual", July, 1980

Instructional Formula Section

I. Introduction

The instruction program consists of formal instructional activities which are available to students seeking an academic, professional, adult basic education, vocational or occupational curriculum, or desiring to continue their education through non-credit instructional programs. Six elements are included in this program: (1) Instruction and departmental research - general; (2) Instruction and departmental research - health sciences; (3) Special session instruction; (4) Community education; (5) Extension education; and (6) Joint Center for Graduate Education - Richland. This manual describes the instruction and departmental research - general subprogram since this is the only element which contains a formula analysis system. Funding for the other five elements is requested and provided through non-formula methods.

The following illustration depicts the relationship of each element to the total instruction program.



II. Background and Methodology

Formula budgeting in the area of instruction has been in use in the State of Washington for over twenty years. The legislative auditor employed a formula approach to the faculty requests for the three regional universities in the 1955-57 biennium using ratios based on historical relationships. The ratios were modified by the employment of standards in the 1957-59 budget which provided one faculty member for twenty lower division students, one for each thirteen upper division students, and one for each ten graduate students. According to the November, 1974, report of the Legislative Budget Committee on this subject, these standards were based on averages for higher education in the United States as reported by the President's Conference on Higher Education. The standards were also adopted by the National Association for Accreditation of Colleges of Teacher Education. In 1959-60, the universities agreed to the same ratios at the undergraduate level with an assumption of seven to one staffing at the first stage graduate level, five to one at the second stage, and three to one at the candidate level of graduate instruction, with differential ratios for certain high cost areas such as engineering at the undergraduate level.

In 1966, the regional universities indicated dissatisfaction over the operation of the staffing formula and its equity. The regional universities agreed to use the staffing formula with a lower ratio assumed at the upper division level pending further study. During 1967-69, a comprehensive review of formulas was initiated which led to the formulas which are currently used by the four-year colleges and universities.

Shortly after its formation, the State Board for Community College Education decided to employ a formula approach to the instruction program. The State Board adopted the twenty to one student-faculty ratio asssumption for academic work and a one and one-half to one relationship in the vocational areas which derived a 13.3 to one student-faculty ratio. The first Unit Expenditures Study conducted by the Council on Higher Education in 1971 led to a modification of the assumptions for vocational areas. In subsequent years, the State Board has employed a formula approach which differentiates by discipline category, in both the academic and vocational areas. The academic area includes Business Administration, Physical Sciences, Mathematics, Social Sciences, Humanities, Health and Physical Education, and Education. The vocational area includes the following technology clusters: Business and Commerce, Data Processing, Health and Paramedic, Mechanics and Engineering, Natural Sciences, Public Services, and Occupational Support.

The staffing formula used by the community college system operates in much the same way as that of the four-year institutions. However, there are four major differences: (1) Vocational instructional programs are included, (2) Summer session is included, (3) Each discipline has a unique faculty staffing relationship, and (4) There is a discrete part-time/full-time faculty distinction in the calculation of salary costs.

III. Formula Description

The formula system contains two formulas: Faculty staffing and support costs; and processes for calculation of salary and fringe benefit costs and for treatment of non-comparable items. These components are described below:

A. Faculty Staffing

1. Four-Year Institutions

The faculty staffing formula, as used by the four-year institutions has two faculty to student credit hour (SCH) relationships. The first relationship deals with "regular cost areas" which apply to all SCH's at the regional institutions and a portion of the SCH's at the two doctoral universities, and is noted below:

100/200 Course Levels:	300 SCH per FTE formula faculty*
300/400 Course Levels:	165 SCH per FTE formula faculty
500 Course Levels:	70 SCH per FTE formula faculty
600/700 Course Levels:	50 SCH per FTE formula faculty

The "high cost areas" are defined as the College of Engineering at both doctoral universities and the Colleges of Architecture, Fisheries, and Forestry at the University of Washington.** Since the 1977-79 biennium, fifty percent (50%) of Washington State University's College of Agriculture student credit hours have been assigned to the high cost area. The relationship is:

100/200 Course Levels:	180 SCH per FTE formula faculty
300/400 Course Levels:	105 SCH per FTE formula faculty
500 Course Levels:	70 SCH per FTE formula faculty
600/700 Course Levels:	50 SCH per FTE formula faculty

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* The ratios are expressed in credit hours per faculty and may be interpreted as student-faculty ratios by dividing 100-400 level hours by 15 and 500 level and above hours by 10.

** "High cost areas" are limited to those statutory major lines at the two doctoral universities with demonstrably lower student faculty ratios at the undergraduate course levels.

The faculty staffing formula makes no special allowance for the administration of instructional departments, specially assigned duties such as community service, committee assignments, cost sharing on research grants and contracts, or sabbatical leaves. Only those faculty who are in positions of an administrative nature and are not directly assigned to an instructional department or group of instructional departments generating student credit hours are excluded from the formula. These positions, which are subject to biennial review, are defined as "non-formula" faculty and are separately denoted in the formula model as a historical relationship to formula faculty. The result of this approach is that over 99 percent of the academic staff in the comparable areas of the instruction program are included in the formula. This approach reflects a continuation of the scope of previous faculty staffing formulas used in Washington.

2. Community Colleges

The faculty staffing formula for the community college system follows the same basic format as that of the four-year institutions. The basic difference is that each discipline in both the academic and vocational areas has its own unique FTE student per FTE faculty relationship. This relationship is based upon the 1970-71 CPE Unit Expenditures Study. Initially, the academic student/faculty relationship assumed the 20 to 1 ratio used at the lower division level of the four-year model. It should be noted, however, that this ratio has been adjusted slightly over the years to reflect changes in the enrollment mix between programs.

The disciplines within each area are combined to form seven "clusters" for academic programs and seven "clusters" for vocational programs. As shown below, a ratio of FTE students to FTE faculty is then developed for each cluster, based on the disciplines within each cluster, which is then used in the determination of the FTE faculty entitlement.

Student/Faculty Ratios by Cluster
1979 - 1980

	FTE Student/ Faculty Ratio
Academic	
Business Administration	24.36:1
Sciences	17.34:1
Mathematics	21.60:1
Social Sciences	22.45:1
Humanities	16.21:1
Health and Physical Education	14.05:1
Education	22.32:1
Vocational	
Business and Commerce Technology	17.34:1
Data Processing Technology	14.37:1
Health and Paramedic Technology	10.29:1
Mechanics and Engineering Technology	14.33:1
Natural Sciences Technology	15.02:1
Public Services Technology	15.43:1
Occupational Support Technology	17.99:1

Although the community college system does not have a non-formula faculty component, their formula does include a category for supervision. These FTE's represent faculty who supervise the direct instructional activities.

3. Conversion of Formula Faculty Into Dollars

Before an average faculty salary can be applied to the total number of formula faculty, the total formula faculty must be adjusted with respect to the budgeted or requested percent of formula. In the case of the four-year institutions, this adjusted figure is then multiplied by the average faculty salary unique to each institution to obtain the budgeted or requested amount of funding. In the case of the community colleges, the total number of faculty are broken down into two salary groups: (1) Regular and supervisory faculty; and (2) Part-time faculty. This breakdown is based on the most recent historical data. The total of each salary group is then multiplied by the average faculty salary associated with that group and then the two groups are totaled.

B. Support Costs

1. Four-Year Institutions

The costs associated with support include, but are not restricted to, salaries and wages of clerical and technical employees, part-time and hourly help, and graders and readers, and operations costs other than salaries and wages. The total supporting costs at 100 percent of formula are based on the budgeted number of faculty generated from the faculty staffing formula* multiplied by a dollar level of support. This 100% figure is then adjusted by the budgeted percent of formula to

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* The budgeted number of faculty represents a level of funding less than 100% of model. The budgeted number of faculty for the 1979-81 biennium is based on a formula level of 72 percent for the state college and regional universities and 70 percent for the doctoral universities.

arrive at the actual support amount allocated to the institution. The dollar level of support is determined by adding the total salary of support personnel to the total of all other operations support costs. These two figures are based on data developed in 1969 which reflected average amounts per FTE faculty and non-faculty in the operating budgets of the two major universities, converted to 100 percent of model. This dollar value is adjusted each biennium by OCSCUP in consultation with OFM to reflect salary and projected inflationary increases.

2. Community Colleges

The community college support costs are based on the total support salaries and operations costs determined for each discipline cluster. These costs were originally derived from the 1972-73 Council for Post-secondary Education Unit Expenditures Study and have been adjusted to reflect inflationary and salary increases and the change in enrollment mix between clusters. However, since the 1975-77 biennium, funding for community college equipment replacement has been excluded from the formula calculation and is funded outside of the formula. After the support costs are totaled for all clusters, the amount is divided by the number of FTE students to yield the support costs per FTE student. The support costs per FTE student are then adjusted by the budgeted percent of formula to reflect the funding level of support for the ensuing biennium.

C. Fringe Benefits

The fringe benefit percentages are applied to the sum of the total budgeted faculty dollars plus the total budgeted support salary dollars. The fringe benefit percentage is adjusted biennially by each individual institution or OFM to reflect known or anticipated changes in state insurance, social security, and/or retirement.

D. Non-Comparable Items

In addition to the formula amounts, funding for non-comparable (non-formula) elements may be requested. Some examples of the types of elements are: (1) Special instructional programs which received favorable Council for Postsecondary Education recommendation on condition that they operate outside of the formula, (2) New programs with unique start-up costs, (3) Funds to cover multi-state agreements, e.g., WAMI at Washington State University, (4) Reserve Officer Training Corps (ROTC), (5) Special appropriations for equipment replacement, and (6) Small school adjustment for community colleges.* In addition, the community college system receives non-comparable funding for their Directors of Continuing Education and Directors of Vocational Education.

E. Academic Administration

This category provides administrative support and management direction for the instructional program. (A more comprehensive definition is included in Section IV.) The division of total formula generated dollars between Program 011 (Instruction and Departmental Research) and Program 043 (Academic Administration) is based on each institution's or system's experience as to the funds necessary to support the administrative staff. This administrative staff consists

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* Although the small school adjustment is a nonformula item, the amount of funding is based on a percent of formula entitlement for faculty staffing which is increased at the rate of one percentage point above the 72 percent base level for each 100 FTE students below the 2,500 FTE enrollment level, except that no college is funded in excess of 87 percent of formula.

primarily of the dean's office, and does not include staff at the departmental level. Although this amount is subtracted from 011, it is subsequently added to subprogram 043 - Academic Administration.

F. Total Budget for 011 Instruction Program

The total 011 instruction program budget is comprised of the total of faculty costs, support and operations costs, fringe benefits, and the costs associated with non-comparable items minus the dollar amount attributable to academic administration.

NOTE: The mythic institution described in this document does not offer any programs in the health sciences area, Subprogram 012. However, if it did, and depending on the discipline and institutional type, there is the potential for the credit hours in Speech Pathology and Audiology to be included in Subprogram 012. If an institution chooses to use Subprogram 012 for Speech Pathology and Audiology, the student credit hours would first need to be broken out from the total contract credit hours and run through the formula. The amount of funding generated for the Speech Pathology and Audiology discipline would then be subtracted from the formula total generated by the contract credit hours in order to obtain the total budget for the 011 instruction element. The funding generated by the Speech Pathology and Audiology student credit hours would be subsequently added to Subprogram 012 - Instruction and Departmental Research - Health Sciences. (Appropriate documentation to insure that the above has taken place must be submitted along with the institution's budget request.) Since there is no funding advantage to including Speech Pathology and Audiology in Subprogram 012, the institution also has the option of leaving these credit hours, and the subsequent funding in Subprogram 011.

IV. Formula Definitions

Formula Faculty FTE: Within comparable areas of the instruction program, and excluding FTE non-formula faculty and sub-faculty, the full-time equivalency of: (1) Budgeted ranked faculty and sub-faculty above the level of teaching assistant and pre-doctoral associate I, and (1) One-half of the full-time equivalency of the latter two categories.

Non-Formula Faculty: The full-time equivalency of faculty properly chargeable to comparable areas of the instruction program but who are in positions of an administrative nature not directly connected with an instructional department or group of instructional departments generating student credit hours. These are excluded from the formula by mutual agreement between institutions. An example of this would be the Dean of the Graduate School.

In all of the above definitions, it is the percentage of time of a budgeted faculty position chargeable to comparable areas of the instructional program over a period of not less than nine months which determines full-time equivalency.

Average Annual Student Credit Hour: Average annual student credit hours for the four-year institutions = total academic year student credit hours divided by 2 for semester credits or 3 for quarter credits. Average annual student credit hours for the community college system = total credit hours for the fiscal year divided by 3 for quarter credits.

FTE Student Enrollment: The total student credit hours attributable to courses numbered 100 through 400 divided by 15 for both the four-year

institutions and the community college system. In addition, for the four-year institutions, the total student credit hours attributable to courses numbered 500 and above divided by 10 are included to obtain their total FTE enrollment count.

Student Credit Hours: The number of students in a course multiplied by the credit hour value of a course equals the student credit hours attributable to a course.

Academic Administration: This category is intended to identify separately the expenditures for the management function in the instruction area. It includes the expenditures of academic deans and directors but does not include those of the departmental chairperson.

Non-Comparable Items: In developing the analysis system for the instructional program, certain items must be segregated for separate budgetary review in order to achieve comparability between institutions. Each item is considered independent of the formula and, if approved, funded on a non-formula basis.

V. Formula Application

The following is a hypothetical example of the formula in operation.

A. Four-Year Model

Inputs:

100/200 level SCH	36,405
300/400 level SCH	43,995
500 level SCH	6,950
600 level SCH	3,660
(no "high cost" SCH)	
Non-formula faculty	8.2
Average faculty salary	$21,078
Support costs per FTE faculty	$4,536
Operations costs per FTE faculty	$2,204
Fringe benefit rate	18.60%
Academic administration adjustment	($683,510)

1. Faculty Staffing

Step 1 - FTE Faculty Entitlement

FTE faculty entitlement is determined by applying the appropriate student credit hour per FTE faculty relationship, displayed in the previous section, to the projected student credit hours shown above.

Projected SCH per level ÷ SCH per FTE faculty = FTE faculty per level

Sum of level	=	total FTE faculty
36,405 ÷ 300	=	121.35
43,995 ÷ 165	=	266.64
6,950 ÷ 70	=	99.29
3,660 ÷ 50	=	73.20
Total FTE faculty		560.48

Step 2 - Budgeted Formula Number of FTE Faculty

The formula may be used in two ways: (1) To determine formula percentage, and (2) To determine the budgeted number of FTE faculty. In order to obtain the formula percentage, the actual or budgeted formula number of FTE faculty is divided by the total number of FTE faculty determined at 100 percent of formula. For this example, the budgeted formula number of FTE faculty is 403.55.

Total formula budgeted number of FTE faculty ÷ total FTE faculty at 100 percent of formula = formula percentage

403.55 ÷ 560.48 = .72 72%

In order to obtain the budgeted formula number of FTE faculty, the total FTE faculty at 100 percent of formula is multiplied by the budgeted percent of formula. For this example, the budgeted percent of formula is 72 percent.

Total FTE faculty at 100 percent of formula X budgeted percent of formula = total budgeted formula FTE faculty

560.48 X 72% = 403.55

Step 3 - Total Budgeted FTE Faculty

The total budgeted FTE faculty is obtained by adding the total budgeted formula FTE faculty to the number of non-formula faculty.

Total budgeted formula FTE faculty + non-formula faculty = total budgeted FTE faculty

403.55 + 8.20 = 411.75

Step 4 - Faculty Salary

The total faculty salary is determined by multiplying the total budgeted FTE faculty by the average faculty salary which is unique to each institution. The average faculty salary is the same for both years of the ensuing biennium and may be equal to the carry forward budgeted amount for the second year of the current biennium depending on the effective salary increase date.

Total budgeted FTE faculty X average faculty salary = total budgeted faculty salary

411.75 X $21,078 = $8,678,867

2. Total Support

Step 1 - Formula Support per Budgeted FTE Faculty

Formula support per budgeted FTE faculty is determined by adding the average support salary per budgeted FTE faculty to the average operations costs per budgeted FTE faculty. Included in the operations costs are costs associated with equipment replacement. The average support salary figure is the same for both years of the ensuing biennium and may be equal to the carry forward budgeted amount for the second year of the current biennium. The operations cost figure is adjusted biennially by OCSCUP and OFM to reflect inflationary increases.

Average support salary per FTE faculty + average operations costs per FTE faculty = total formula support per FTE faculty

$4,536 + $2,204 = $6,740

Step 2 - Budgeted Formula Support per FTE Faculty

As with the faculty staffing formula, the support formula can be used in two ways: (1) To determine formula percentage, and (2) To

determine the budgeted formula support per FTE faculty. In order to obtain the formula percentage, the actual or formula budgeted support is divided by the total formula support determined at 100 percent of formula. For this example, the formula budgeted support is $5,055.

Formula budgeted support per FTE faculty ÷ total formula support per FTE faculty = formula percentage

$5,055 ÷ $6,740 = .75 — 75%

The formula budgeted support per FTE faculty is obtained by multiplying the total formula support per FTE faculty by the formula percentage. For this example, the formula percentage is 75 percent.

Total formula support per FTE faculty X formula percentage = formula budgeted support per FTE faculty

$6,740 X .75 = — $5,055

Step 3 - Total Budgeted Support Costs

The total support costs are determined by multiplying the formula budgeted support per FTE faculty by the total budgeted number of FTE faculty.

Formula budgeted support per FTE faculty X budgeted number of FTE faculty = total budgeted support costs

$5,055 X 411.75 = — $2,081,396

3. Fringe Benefits

Step 1 - Support Fringe Benefits Amount

Fringe benefits for the support area are determined by applying the fringe benefit rate to the average support costs per FTE faculty, adjusted by the budgeted percent of formula. This figure is then

multiplied by the budgeted number of FTE faculty. The result is the fringe benefit amount for support.

Fringe benefit rate X average support costs per FTE faculty X formula percentage = fringe benefits for support per FTE faculty

18.60% X $4,536 X 75% = $632.77

Fringe benefit for support per FTE faculty X budgeted number of FTE faculty = support fringe benefit amount

$632.77 X 411.75 = $260,543

Step 2 - Faculty Fringe Benefit Amount

The faculty fringe benefit amount is determined by applying the fringe benefit rate to total faculty salary (calculated in a previous section).

Fringe benefit rate X total faculty salary = faculty fringe benefit amount

18.6% X $8,678,867 = $1,614,269

Step 3 - Total Fringe Benefit Amount

The total fringe benefit amount is determined by adding the faculty fringe benefit amount to the support fringe benefit amount.

Faculty fringe benefit amount + support fringe benefit amount = total fringe benefit amount

$1,614,269 + $260,543 = $1,874,812

4. Non-Comparable Items

All non-comparable items relating to the 011 portion of the instruction program are totaled.

Non-comparable items:

Military science	$16,570
New Instructional Program	67,910
Equipment replacement	531,060
Total	$615,540

Non-comparable item #1 + non-comparable item #2 + non-comparable item #3 = total non-comparable dollars.

5. Total Budget for Subprogram 011 of the Instructional Program.

The total 011 budget is determined by adding together the total budgeted faculty salary amount, total budgeted support costs amount, total fringe benefit amount, and the total non-comparable dollar amount and subtracting the academic administration adjustment.

Total budgeted faculty salary amount + total budgeted support costs + total fringe benefits + total non-comparable dollars - academic administration adjustment = total budget for subprogram 011 of the instruction program.

$8,678,867 + $2,081,396 + $1,874,812 + $615,540 - $683,510 = $12,567,105

(The academic administration adjustment amount is transferred to Program 043 - Academic Administration.)

B. Community College System Model

Inputs:

	FTE students	÷ Ratio*	= FTE Faculty
Academic			
Business Administration	2,533	24.36	103.98
Sciences	5,460	17.34	314.88
Mathematics	4,125	21.60	190.97
Social Sciences	9,233	22.45	411.27
Humanities	13,691	16.21	844.60
Health & Physical Education	2,961	14.05	210.75
Education	7,112	22.32	318.64
Total Academic	45,115		2,395.09
Vocational			
Business and Commerce	11,930	17.34	688.00
Data Processing	997	14.37	69.38
Health and Paramedic	4,706	10.29	457.34
Mechanics and Engineering	11,941	14.33	833.29
Natural Sciences	6,532	15.02	434.89
Public Services	2,884	15.43	186.91
Occupational	5,996	17.99	333.30
Total Vocational	44,986		3,003.11
Overall Total	90,101		5,398.20

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* The ratio for each cluster is determined in the following manner. Each cluster is made up of a number of four digit HEGIS programs. Each program has its own ratio. This ratio is based on the Council's 1970-71 Cost Study. These individual ratios have been adjusted slightly over the years to reflect changes in the enrollment mix between programs. This adjustment is made by the State Board and reviewed by the Office of Financial Management and Legislative staffs. The faculty determined for each program in the cluster is then added together and compared to the FTE students for the cluster and the resulting figure is the ratio for the cluster. The data used to determine these ratios are obtained from the most recent report: MIS - 2:3A.

Inputs (Continued)

Percent faculty on part-time status	37.9%
Prior year part-time faculty	1,511.5
Prior year full-time faculty	2,286.7
Prior year supervisory faculty	189.8
Average full-time and supervising salary	$18,863
Support salaries per FTE student	$12,286
Support costs per FTE student	$ 171
Operational costs per FTE student	$ 133
Fringe benefit rate	13.69%
Academic administration adjustment	($4,690,000)

1. Faculty Staffing

Step 1 - Regular Faculty per Area

The staffing level is determined by applying the student/faculty ratio to the number of FTE students for each discipline cluster. The FTE faculty in each cluster are then totaled for all academic and for all vocational. The computations (FTE students per cluster ÷ student/faculty ratio per cluster = FTE faculty per cluster) were completed as part of the input section on the preceding page.

Step 2 - Total Regular Faculty

The totaling of the academic and vocational areas yields the total regular staffing.

Total academic faculty + total vocational faculty = total regular faculty

2,395.09 + 3,003.11 = 5,398.2

Step 3 - Supervisory Faculty

Supervisory faculty are certain faculty who supervise instructional activities. Not included are Deans of Instruction, Directors of Continuing

Education, and Directors of Vocational Education. This faculty category was created to demonstrate to the individual institutions that the budgeted funds are not exclusively intended for the classroom. Supervisory faculty is determined by taking 5 percent of the total regular faculty.

Total regular faculty X 0.05 = total supervisory faculty

5,398.2 X 0.05 = 269.9

Step 4 - Total Faculty

The total faculty is obtained by adding the total regular faculty to the total supervisory faculty.

Total regular faculty + total supervisory faculty = total faculty

5,398.2 + 269.9 = 5,668.1

Step 5 - Total Budgeted Faculty

The formula may be used in two ways: (1) To determine formula percentage, and (2) To determine the budgeted number of FTE faculty. The formula percentage is obtained by dividing the actual or budgeted formula number of FTE faculty determined at 100 percent of formula. For this example, the budgeted formula number of FTE faculty is 4,081.1.

Budgeted formula number of FTE faculty ÷ total number of FTE faculty at 100 percent of formula = formula percentage

4,081.1 ÷ 5,668.1 = .72 = 72%

The total budgeted faculty is determined by multiplying the total FTE faculty at 100% of formula by the budgeted percent of formula. For this example, the budgeted percent of formula is 72 percent.

Total FTE faculty at 100 percent of formula X budgeted percent of formula = total budgeted faculty

5,668.1 X .72 = 4,081.1

Step 6 - Faculty Grouping

The total budgeted faculty are grouped into three categories: (1) Full-time faculty, (2) Part-time faculty, and (3) Supervisory faculty. The relationship between the part-time category is determined from the most recent historical data.

Total budgeted faculty X percent of part-time faculty = budgeted part-time faculty

4,081.1 X .379 = 1,546.7

The budgeted supervisory staff number is obtained by applying the faculty formula percentage to the total supervisory faculty.

Total supervisory faculty X faculty formula percentage = budgeted supervisory faculty

269.9 X 72% = 194.3

The budgeted full-time faculty number is the remainder after the above two faculty groups have been subtracted from the total budgeted faculty.

Total budgeted faculty - (budgeted part-time faculty + budgeted supervisory faculty) = budgeted full-time faculty

4,081.1 - (1,546.7 + 194.3) =
4,081.1 - 1,741 = 2,340.1

Full-time faculty	2,340.1
Part-time faculty	1,546.7
Supervisory faculty	194.3
Total	4,081.1

Step 7 - Total Salary

The total salary is determined by multiplying the average salary per faculty grouping by the budgeted number of faculty in each group. Totals for each group are then totaled to obtain the total salary.

Average salary per group X budgeted number of faculty per group = salary per group

$18,863	X	2,340.1	=	$44,141,306
$12,286	X	1,546.7	=	$19,002,756
$18,863	X	194.3	=	$ 3,665,081
		Total		$66,809,143

2. Total Support

Step 1 - Formula Support per FTE Student

Formula support per FTE student is determined by adding the average support salary per FTE student to the average operations cost per FTE student. Equipment replacement costs are not included in the operations costs. Each discipline cluster has a unique support salary and operations cost. Anticipated changes in enrollment mix cause these two elements to change over the ensuing biennium. Also, the operations cost is influenced by the inflationary factors prepared by OFM.

Average support salaries per FTE student + average operations cost per FTE student = formula support per FTE student

$171 + $133 = $304

Step 2 - Budgeted Formula Support per FTE Student

As with the faculty staffing formula, the support formula can be used in two ways: (1) To determine formula percentage, and (2) To determine the budgeted formula support per FTE student. In order to obtain the formula percentage, the actual or budgeted amount of support is divided by the total formula support determined at 100 percent of formula. For this example, the budgeted support is $156.56.

Budgeted support ÷ formula support per FTE student = formula percentage

$156.56 ÷ $304 = 0.515 = 51.5%

The budgeted formula support per FTE student is obtained by multiplying the formula support per FTE student by the formula percentage. For this example, the formula percentage is 51.5 percent.

Formula support per FTE student X formula percentage = budgeted formula support per FTE student

$304 X 51.5% = $156.56

Step 3 - Total Budgeted Support

The total budgeted support amount is determined by multiplying the budgeted formula support per FTE student by the total number of FTE students.

Budgeted formula support per FTE student X number of FTE students = total budgeted support

$156.56 X 90,101 = $14,106,213

3. Fringe Benefits

Step 1 - Support Fringe Benefit Amount

Fringe benefits for support are determined by applying the fringe benefit rate to the average support salary per FTE student, adjusted by the budgeted percent of formula. This adjusted number is then multiplied by the number of FTE students to yield the total fringe benefit amount for support.

Average support salary X formula percentage X fringe benefit rate X number of FTE students = total fringe benefit amount for support

$171 X 51.5% X 13.69% X 90,101 = $1,086,267

Step 2 - Faculty Fringe Benefit Amount

The faculty fringe benefit amount is determined by applying the fringe benefit rate to the total faculty salary (calculated in a previous section).

Fringe benefit rate X total faculty salary = faculty fringe benefit amount

13.69 X $66,809,143 = $9,146,172

Step 3 - Total Fringe Benefit Amount

The total fringe benefit amount is determined by adding the faculty fringe benefit amount to the support fringe benefit amount.

Faculty fringe benefit amount + support fringe benefit amount = total fringe benefit amount

$9,146,172 + $1,086,267 = $10,232,439

4. Non-Comparable Items

The following is a list of items and associated costs which have in the past been funded on a non-comparable basis.

Small school adjustment*	1,114,824
Equipment repair/replacement	3,712,213
Community education	650,000
Directors of Continuing Education and Vocational Education	1,628,002
Total	$7,105,039

Non-comparable item #1 + non-comparable item #2 + non-comparable item #3 + non-comparable item #4 = total non-comparable dollars

5. Total Budget for the Instructional Program

The total 01 budget is determined by adding together the total budgeted faculty salary amount, total budgeted support costs, total fringe benefit amount, and the total non-comparable dollar amount.

Budgeted faculty salary amount + total budgeted support costs + total fringe benefits + total non-comparable dollars - academic administration adjustment = total budget for subprogram 011 of the instruction program.

$66,809,143 + $14,106,213 + $10,232,439 + $7,105,039 - $4,690,000 = $93,562,834

(The academic administration adjustment amount is transferred to Program 043 - Academic Administration.)

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* The distribution of funds relating to the small school adjustment is based on a percent of formula entitlement for faculty staffing which is increased at the rate of one percentage point above the 72 percent base level for each 100 FTE students below the 2,500 enrollment level, except that no college is funded in excess of 87 percent of formula.

APPENDIX B

Supplemental Tables

TABLE B-1

University of Washington
Faculty Staffing: Percent of Formula Analysis

	Discipline	Faculty at 100 Percent of Formula[1] (FTE's)	Faculty at 70 Percent of Formula (FTE's)	Actual Assigned Faculty[2] (FTE's)	Percent of Formula (%)	Difference From Formula Entitlement (FTE's)	Percent of Formula Entitlement
01	Agriculture and Natural Resources*	129.2	90.4	66.0	51.1	- 24.4	75*
02	Architecture and Environmental Design*	94.8	66.4	62.6	66.0	- 3.8	94*
03	Area Studies	8.7	6.1	12.0	137.9	+ 5.9	197
04	Biological Sciences	88.1	61.7	66.9	75.9	+ 5.2	108
05	Business and Management	221.9	155.3	123.4	55.6	- 31.9	79
06	Communications	44.6	31.2	27.0	60.5	- 4.2	87
07	Computer and Information Sciences	13.4	9.4	9.0	67.2	- 0.4	96
08	Education	172.2	120.5	112.4	65.3	- 8.1	93
09	Engineering*	270.0	189.0	166.8	61.8	- 22.2	88*
10	Fine and Applied Arts	118.9	83.2	135.2	113.7	+ 52.0	163
11	Foreign Language	99.4	69.6	119.8	120.5	+ 50.2	172
13	Home Economics	13.2	9.2	17.0	128.8	+ 7.8	185
14	Law	103.7	72.6	37.6	36.3	- 35.0	52
15	Letters	192.3	134.6	143.3	74.5	+ 8.7	106
16	Library Science	19.5	13.7	12.0	61.5	- 1.7	88
17	Mathematics	104.8	73.4	72.5	69.2	- 0.9	99
19	Physical Sciences	207.2	145.0	166.5	80.4	+ 21.5	115
20	Psychology	98.8	69.2	50.6	51.2	- 18.6	73
21	Public Affairs and Services	83.9	58.7	49.7	59.2	- 9.0	85
22	Social Sciences	338.1	236.7	213.8	63.2	- 22.9	90
49	Interdisciplinary Studies	22.4	15.7	22.2	99.1	+ 6.5	141
	TOTAL/OVERALL	2,445.1	1,711.6	1,686.3	69.0[3]	- 25.3	99

*High cost areas.

[1]Formula factors:

	High Cost	Regular Cost
Lower Division	180	300
Upper Division	105	165
500	70	70
600+	50	50

[2]As reported in the 1976-77 Unit Expenditures Study. The reported FTE faculty include Departmental Administration and exclude FTE faculty assigned to research projects to fulfill institutionally agreed to cost sharing commitments.

[3]The University of Washington was budgeted at 70 percent of formula based on contract enrollment assumptions as determined in early 1975 for the 1975-77 biennium.

TABLE B-2

Washington State University
Faculty Staffing: Percent of Formula Analysis

	Discipline	Faculty at 100 Percent of Formula[1] (FTE's)	Faculty at 70 Percent of Formula (FTE's)	Actual Assigned Faculty[2] (FTE's)	Percent of Formula (%)	Difference From Formula Entitlement (FTE's)	Percent of Formula Entitlement
01	Agriculture and Natural Resources*	105.4	73.8	55.1	52.3	- 18.7	75*
04	Biological Sciences	122.9	86.0	73.0	59.4	- 13.0	85
05	Business and Management	110.0	77.0	53.7	48.8	- 23.3	70
06	Communications	32.2	22.5	13.2	41.0	- 9.3	59
07	Computer and Information Sciences	19.4	13.6	12.3	63.4	- 1.3	90
08	Education	116.3	81.4	82.1	70.6	+ 0.7	101
09	Engineering**	130.9	91.6	78.1	59.7	- 13.5	85**
10	Fine and Applied Arts	43.9	30.7	39.1	89.1	+ 8.4	127
11	Foreign Language	25.3	17.7	24.7	97.6	+ 7.0	140
13	Home Economics	37.6	26.3	23.7	63.0	- 2.6	90
15	Letters	106.1	74.3	83.4	78.6	+ 9.1	112
17	Mathematics	53.3	37.3	36.0	67.5	- 1.3	97
19	Physical Sciences	88.6	62.0	61.2	69.1	- 0.8	99
20	Psychology	51.4	36.0	22.4	43.6	- 13.6	62
21	Public Affairs and Services	12.5	8.8	5.7	45.6	- 3.1	65
22	Social Sciences	173.1	121.2	123.1	71.1	+ 1.9	102
49	Interdisciplinary Studies	4.4	3.1	12.7	288.6	+ 9.6	410
	TOTAL/OVERALL	1,233.3	863.3	799.5	64.8[3]	- 63.8	93

*This area was split 50/50 between regular cost and high cost by the Legislature.

**High cost area.

[1]Formula factors:

	High Cost	Regular Cost
Lower Division	180	300
Upper Division	105	165
500	70	70
600+	50	50

[2]As reported in the 1976-77 Unit Expenditures Study. The reported FTE faculty include Departmental Administration and exclude FTE faculty assigned to research projects to fulfill institutionally agreed to cost sharing commitments.

[3]Washington State University was budgeted at 70 percent of formula based on contract enrollment assumptions as determined in early 1975 for the 1975-77 biennium.

TABLE B-3

Central Washington University
Faculty Staffing: Percent of Formula Analysis

	Discipline	Faculty at 100 Percent of Formula[1] (FTE's)	Faculty at 72 Percent of Formula (FTE's)	Actual Assigned Faculty[2] (FTE's)	Percent of Formula (%)	Difference From Formula Entitlement (FTE's)	Percent of Formula Entitlement
03	Area Studies	1.6	1.2	0.4	25.0	- 0.8	33
04	Biological Sciences	16.5	11.9	15.3	92.7	+ 3.4	129
05	Business and Management	39.1	28.2	16.2	41.4	- 12.0	57
06	Communications	2.8	2.0	2.9	103.6	+ 0.9	148
07	Computer and Information Sciences	1.2	0.9	1.0	83.3	+ 0.1	111
08	Education	159.3	114.7	96.4	60.5	- 18.3	84
10	Fine and Applied Arts	41.6	30.0	40.6	97.6	+ 10.6	135
11	Foreign Language	8.7	6.3	9.9	113.8	+ 3.3	157
13	Home Economics	10.9	7.9	9.3	85.5	+ 1.4	118
15	Letters	32.7	23.5	29.8	91.9	+ 6.3	127
17	Mathematics	11.6	8.4	10.4	89.7	+ 2.0	124
19	Physical Sciences	15.3	11.0	19.7	128.8	+ 8.7	179
20	Psychology	39.9	28.7	27.6	69.2	- 1.1	96
21	Public Affairs	8.2	5.9	4.1	50.0	- 1.8	69
22	Social Sciences	57.2	41.2	48.3	84.4	+ 7.1	117
49	Interdisciplinary Studies	5.6	4.0	4.3	76.8	+ 0.3	108
	TOTAL/OVERALL	452.2	325.6	336.2	74.4[3]	+ 10.6	103

[1]Formula factors:

	Regular Cost
Lower Division	300
Upper Division	165
500	70
600+	50

[2]As reported in the 1976-77 Unit Expenditures Study. The reported FTE faculty include Departmental Administration and exclude FTE faculty assigned to research projects to fulfill institutionally agreed to cost sharing commitments.

[3]Central Washington University was budgeted at 72 percent of formula based on contract enrollment assumptions as determined in early 1975 for the 1975-77 biennium.

TABLE B-4

Eastern Washington University
Faculty Staffing: Percent of Formula Analysis

	Discipline	Faculty at 100 Percent of Formula[1] (FTE's)	Faculty at 72 Percent of Formula (FTE's)	Actual Assigned Faculty[2] (FTE's)	Percent of Formula (%)	Difference From Formula Entitlement (FTE's)	Percent of Formula Entitlement
02	Architecture and Environmental Design	2.5	1.8	1.6	64.0	- 0.2	89
04	Biological Sciences	17.6	12.7	13.0	73.9	+ 0.3	102
05	Business and Management	57.0	41.0	28.6	50.2	- 12.4	70
06	Communications	15.2	10.9	12.4	81.6	+ 1.5	114
08	Education	110.8	79.8	56.9	51.4	- 22.9	71
10	Fine and Applied Arts	33.2	23.9	33.7	101.5	+ 9.8	141
11	Foreign Language	11.1	8.0	14.3	128.8	+ 6.3	179
13	Home Economics	6.9	5.0	4.8	69.6	- 0.2	96
15	Letters	30.8	22.2	32.2	104.6	+ 10.0	145
17	Mathematics	22.3	16.1	20.2	90.6	+ 4.1	125
19	Physical Sciences	23.6	17.0	22.5	95.3	+ 5.5	132
20	Psychology	44.3	31.9	24.0	54.2	- 7.9	75
21	Public Affairs	24.9	17.9	13.3	53.4	- 4.6	74
22	Social Sciences	64.6	46.5	51.2	79.3	+ 4.7	110
49	Interdisciplinary Studies	1.1	0.8	3.3	300.0	+ 2.5	413
	TOTAL/OVERALL	465.9	335.5	332.0	71.3[3]	- 3.5	99

[1]Formula factors:

	Regular Cost
Lower Division	300
Upper Division	165
500	70
600+	50

[2]As reported in the 1976-77 Unit Expenditures Study. The reported FTE faculty include Departmental Administration and exclude FTE faculty assigned to research projects to fulfill institutionally agreed to cost sharing commitments.

[3]Eastern Washington University was budgeted at 72 percent of formula based on contract enrollment assumptions as determined in early 1975 for the 1975-77 biennium.

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TABLE B-5

Western Washington University
Faculty Staffing: Percent of Formula Analysis

	Discipline	Faculty at 100 Percent of Formula[1] (FTE's)	Faculty at 72 Percent of Formula (FTE's)	Actual Assigned Faculty[2] (FTE's)	Percent of Formula (%)	Difference From Formula Entitlement (FTE's)	Percent of Formula Entitlement
04	Biological Sciences	25.7	18.5	17.6	68.5	- 0.9	95
05	Business and Management	29.9	21.5	15.4	51.5	- 6.1	72
06	Communications	4.4	3.2	4.6	104.6	+ 1.4	144
08	Education	123.7	89.1	86.5	69.9	- 2.6	97
10	Fine and Applied Arts	46.7	33.6	39.9	85.4	+ 6.3	119
11	Foreign Language	16.6	12.0	18.1	109.0	+ 6.1	151
13	Home Economics	8.0	5.8	5.8	72.5	--	100
15	Letters	43.7	31.5	36.3	83.1	+ 4.8	115
17	Mathematics	33.0	23.8	24.5	74.2	+ 0.7	103
19	Physical Sciences	45.0	32.4	40.0	88.9	+ 7.6	123
20	Psychology	47.3	34.1	30.8	65.1	- 3.5	90
22	Social Sciences	121.0	87.1	75.3	62.2	- 11.8	86
49	Interdisciplinary Studies	60.6	43.6	43.2	71.3	- 0.4	99
	TOTAL/OVERALL	605.6	436.0	438.0	72.3[3]	+ 2.0	100

[1]Formula factors:

	Regular Cost
Lower Division	300
Upper Division	165
500	70
600+	50

[2]As reported in the 1976-77 Unit Expenditures Study. The reported FTE faculty include Departmental Administration and exclude FTE faculty assigned to research projects to fulfill institutionally agreed to cost sharing commitments.

[3]Western Washington University was budgeted at 72 percent of formula based on contract enrollment assumptions as determined in early 1975 for the 1975-77 biennium.

TABLE B-6

Graduate Student Credit Hours
Doctoral and Regional Universities

	1972-73			1978-79		
	500 Level	600+ Level	Overall Graduates	500 Level	600+ Level	Overall Graduates
University of Washington	31,195	15,844	47,039	39,508*	17,278*	56,786*
Washington State University	7,429	4,926	12,355	9,390	6,979	16,369
Subtotal	38,624	20,770	59,394	48,898	24,257	73,155
Central Washington University	1,646	156	1,802	2,997	552	3,549
Eastern Washington University	2,729	321	3,050	4,395	918	5,313
Western Washington University	2,668	310	2,978	3,690	548	4,238
Subtotal	7,043	787	7,830	11,082	2,018	13,100

SOURCE: 1972-73 and 1978-79 Unit Expenditures Studies.

* Includes those student credit hours reported in 1.2.0400 and 1.2.0900 to make student credit hour totals comparable with 1972-73 totals.

APPENDIX C

Letter from Representative Dan Grimm

DAN GRIMM
TWENTY-FIFTH DISTRICT

OLYMPIA OFFICE	RESIDENCE
328 HOUSE OFFICE BLDG.	904-7TH AVENUE S.W.
OLYMPIA 98504	PUYALLUP 98371
206-753-7800	206-845-2408

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1980

House of Representatives
STATE OF WASHINGTON
OLYMPIA

August 6, 1980

C. Gail Norris
Executive Coordinator
Council for Postsecondary
Education
Mail Stop EW-11
Olympia, WA 98504

Dear Dr. Norris:

At our last Committee meeting, we discussed engineering education with representatives of the University of Washington and Washington State University. George Beckmann, Provost of the University of Washington, indicated at that meeting and in correspondence to you that although the University of Washington's budget request submissions were built on the basis of engineering credit hours as "high cost," the University neither allocates nor monitors expenditures on that basis.

As I understand it, the Council for Postsecondary Education is currently reviewing the instructional formula. In light of Dr. Beckmann's comments, I suggest that you review and pay particular attention to the practice of continuing to utilize a budget formula which does reflect actual operating procedures. I further suggest that the expenditure patterns in high cost programs other than engineering at both the University of Washington and Washington State University be analyzed to determine whether these are being treated in a similar fashion.

I appreciate your assistance in this matter. If you require further clarification, please let me or the Committee staff know.

Sincerely,

Dan Grimm

REPRESENTATIVE DAN GRIMM
Co-chairman
Higher Education Committee

DG:sg

cc: Representative Gary Nelson
Representative Alan Thompson

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